Transactions of the Kansas State Board of Agriculture, 1909-1910

Section 15, Pages 421 - 450

This biennial report from the Kansas State Board of Agriculture includes information on farm animals, market classes and grades of meat, general agriculture, common forest trees, and poultry. County statistics include population, acreages, productions, live stock, and assessed valuation of property. State statistics and crop and livestock statistics are also included.

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clean. The first test extended over a period of forty-four days, and the second test covered a period of thirty-one days. On account of the dry weather and early killing frosts in 1909, which stopped the growth of rape, it was impossible to cover the same number of days as in 1908.

For this reason the results of our second year's work are not so good as they are for the first year.

Table of Weights and Gains.

	1908 Experiment.				1909 Experiment.			
	Weight at beginning, Sept. 3.....	Weight at end, Oct. 17.....	Gain.....	Gain per head daily.	Weight at beginning, Aug. 31.....	Weight at end, Oct. 1.....	Gain.....	Gain per head daily.
	lbs.	*lbs.*	*lbs.*	*lbs.*	*lbs.*	*lbs.*	*lbs.*	*lbs.*
LOT I. Rape Pasture.	75	93	18	0.40	76	95	29	0.93
	55	72	17	.39	67	79	12	.39
	73	91	18	.40	63	72	9	.29
	64	72	8	.18	67	79	12	.39
	73	92	19	.43	52	58	6	.19
	62	81	19	.43	72	81	9	.29
	75	89	14	.31	61	72	11	.35
	74	94	20	.45	78	83	5	.16
	63	80	17	.39	71	81	10	.32
	66	85	19	.43	69	80	11	.35
	71	82	11	.25	62	75	13	.42
	60	77	17	.39	.....	.....	.....	.....
	811	1,008	197	0.37	738	855	117	0.34
LOT II. Rape and Corn.	73	94	21	0.48	70	81	11	0.35
	59	78	19	.43	50	63	13	.42
	80	97	17	.39	69	81	12	.39
	78	94	16	.36	57	59	2	.06
	67	75	8	.18	66	79	13	.42
	75	93	18	.40	64	77	13	.42
	61	76	15	.34	69	83	14	.45
	78	92	14	.32	77	83	6	.19
	78	96	18	.40	72	86	14	.45
	73	91	18	.40	73	83	10	.32
	72	86	14	.31	70	76	6	.19
	.....	.....	.....	.....	51	56	5	.16
	794	972	178	0.37	788	907	119	0.32
LOT III. Rape and Oats.	69	91	22	0.50	60	77	17	0.55
	79	98	19	.43	56	75	19	.61
	82	94	12	.27	82	95	13	.42
	78	93	15	.34	78	89	11	.35
	74	95	21	.48	69	85	16	.52
	74	93	19	.43	65	74	9	.29
	71	93	22	.50	65	75	10	.32
	71	91	20	.45	66	78	12	.39
	76	96	20	.45	66	74	8	.26
	71	84	13	.29	66	74	8	.26
	63	87	24	.54	63	70	7	.22
	75	95	20	.45	51	64	13	.42
	883	1,110	227	0.43	787	930	143	0.38
LOT IV. Rape and Barley.	68	80	12	0.27	61	71	10	0.32
	72	91	19	.43	56	68	12	.39
	62	84	22	.50	71	81	10	.32
	73	94	21	.48	66	73	7	.22
	65	83	17	.39	75	85	10	.32
	67	85	18	.40	72	84	12	.39
	69	94	25	.57	78	94	16	.52
	56	71	15	.34	75	91	16	.52
	72	91	19	.43	55	69	14	.45
	71	85	14	.32	56	70	14	.45
	62	86	24	.54	73	85	12	.39
	70	92	22	.50	50	58	8	.26
	807	1,036	229	0.43	788	928	140	0.37

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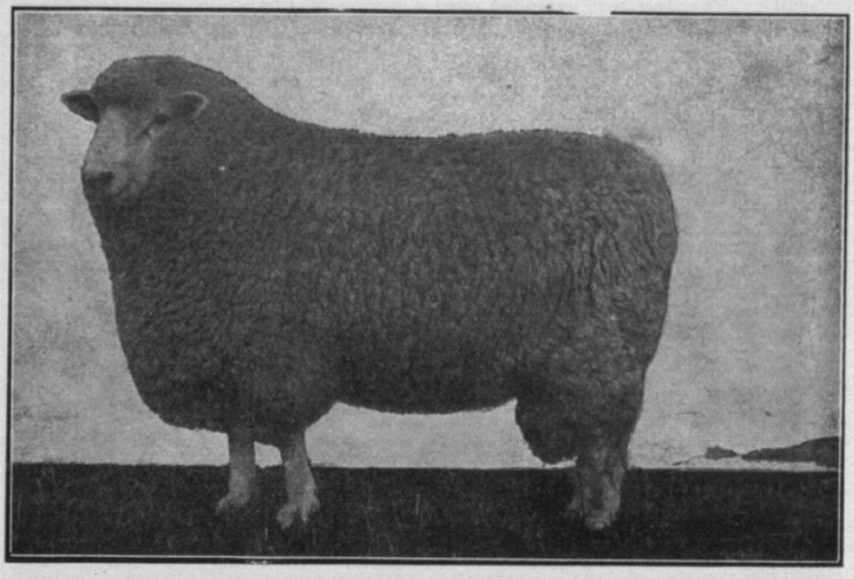
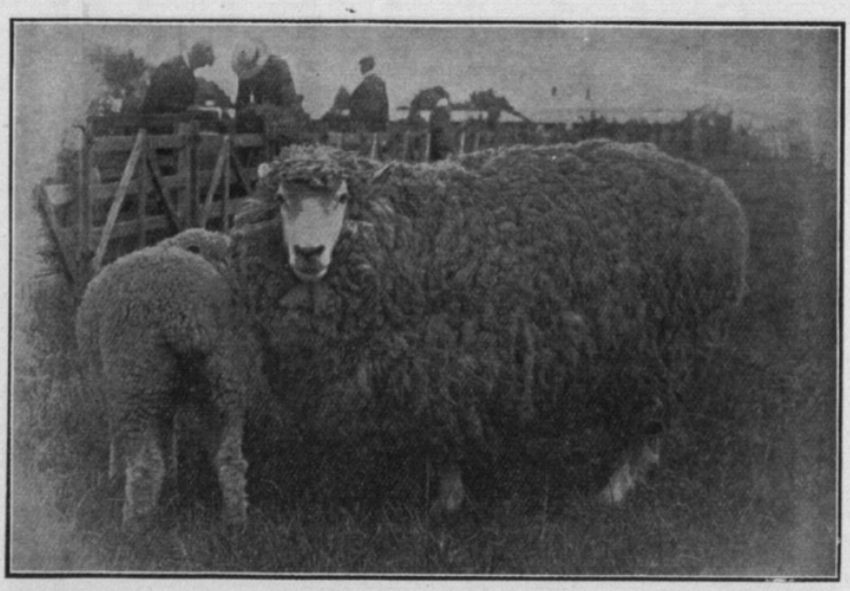


A superb Romney Marsh ram.



A Romney Marsh ewe and lamb.

Lot II, consisting of twenty-three lambs, and receiving what corn they would eat both morning and evening while on rape pasture, did not gain as many pounds as the twenty-three head receiving rape pasture without grain.

The individual gains for lot II either year are not so uniform as for lot I, showing that while the lambs consumed the corn, it interfered with the fattening process. The average gain of the twenty-three head of lambs on rape pasture without grain for the two years was 13.65 pounds, while the average gain for lots receiving rape and corn for two years was 12.91 pounds per head.*

The twenty-four lambs receiving what oats they would eat morning and evening made the largest gain of the four lots, being 15.41 pounds each, as compared to 15.37 pounds for lot IV, receiving barley. The lambs in both lots III and IV for both years made larger and more uniform gains than did the lambs in lots I or II, showing that oats and barley are better suited for rapid gains for lambs than corn or no grain when on rape pasture. The difference in gain in favor of the oat lot is so small that the value of these two grains may be considered about equal pound for pound for fattening lambs on rape. The average gain for the twenty-four lambs fed rape and oats both years was 15.41 pounds, while the average gain for twenty-four lambs fed rape and barley was 15.37 pounds per head.†

Table No. II.

Kinds of Feed.	1908 Experiment.					1909 Experiment.				
	Lambs.....	Days fed.....	Grain consumed...	Gain.....	Av. gain per head daily...	Lambs.....	Days fed.....	Grain consumed...	Gain.....	Av. gain per head daily...
			lbs.	*lbs.*	*lbs.*			*lbs.*	*lbs.*	*lbs.*
Lot I, rape.....	12	44	.....	197	0.37	11	31	.....	117	0.34
Lot II, rape pasture and shelled corn.....	11	44	210	178	0.34	12	31	275	119	0.32
Lot III, rape pasture and oats.....	12	44	303	227	0.43	12	31	282	143	0.38
Lot IV, rape pasture and barley.....	12	44	313	229	0.43	12	31	282	140	0.37

Table No. II shows kind of feed, number of lambs, number of days fed, quantity of grain consumed, total gain and average gain per head daily for each lot and for both years.

The grain ration was the same for both years. For the quantity of grain consumed, the lots receiving oats made the best gains each year, although the two lots receiving barley made practically the same gain for grain consumed. Barley as a rule is much higher in price than oats at this time of the year, hence for economical and quick gains with lambs on rape pasture, oats are to be preferred.

* At the Wisconsin station sixteen wethers were fed on 0.7 of an acre of rape for twenty-five days, and also ate 153.5 pounds of oats and 97.5 pounds of whole corn. They gained a total of 149 pounds, or a weekly average of 2.6 pounds. Valuing the foods and the wethers at cost, and the seelling price of the latter at 4 cents per pound, the rape would be worth $14.48 per acre.

† At the Ontario Experiment Station, fifteen wethers were fed on an acre of rape, with 0.5 pound of oats in addition. Besides eating almost the whole of the crop from an acre in fifty-eight days, they also consumed 345 pounds of oats, and gained 23.67 pounds per head, or a weekly increase of 2.8 pounds per head.

By feeding shelled corn there was a loss each year, as the gains were not so large as they were for the lots receiving the rape pasture alone.

Our results of pasturing sheep and lambs on rape on the college farm and the experiment station have been very satisfactory. An experiment was conducted to determine what conditions must be present to cause bloat when first turning in on rape as follows: Lot I was put in on the clear rape without any other forage plant accessible and kept there day and night; lot II was turned in on a field where they had access to grass in addition to the rape pasture; lot III was turned on the rape when the dew was on early in the morning; lot IV was turned on rape when it was dry. The lambs were raised on the range and were not accustomed to this forage. The result was the same for each lot, all coming through in a healthy condition.

Of the ninety-six head of lambs weighed up for this experiment, two head are not reported. One died a few days after weighing, and the other was affected with worms.

We believe, however, that care should be taken when turning in on any kind of new forage, as there is danger of the animal gorging himself.

SUMMARY.

1. Ten lambs receiving alfalfa hay gained seventy-nine pounds more than did the same number of lambs receiving upland prairie hay, each lot consuming the same quantity of grain.
2. With the 369 head of lambs fed at this station and weighed individually at certain intervals, all receiving practically two pounds of grain when on full feed, the gains have never before been so large for grain consumed. This shows that alfalfa hay with a grain mixture and a little linseed meal was markedly superior to any other grain or forage ration.
3. It required only 3.08 pounds of grain and 3.95 pounds of alfalfa hay to make a pound of gain, as compared to 4.12 pounds of grain and 4.01 pounds of upland prairie hay to make a pound of gain with lambs during same length of feeding period and with the lambs practically of the same weight.
4. Larger and more uniform gains were made with lot receiving alfalfa hay than with lot receiving prairie hay. (See table of weights and gains.)
5. Figuring the price of alfalfa hay and prairie hay the same, it cost one and one-tenth cents more per pound to make a pound of gain with the lot receiving upland prairie hay than it did with the lot receiving alfalfa hay.
6. Lambs fed a grain ration of South Dakota oats while on rape pasture made a larger gain than did lambs fed a grain ration of corn while on rape pasture or a grain ration of barley while on rape pasture.
7. With all the experiments at this station in feeding lambs on rape the loss has not been greater than it is under ordinary feeding operations.

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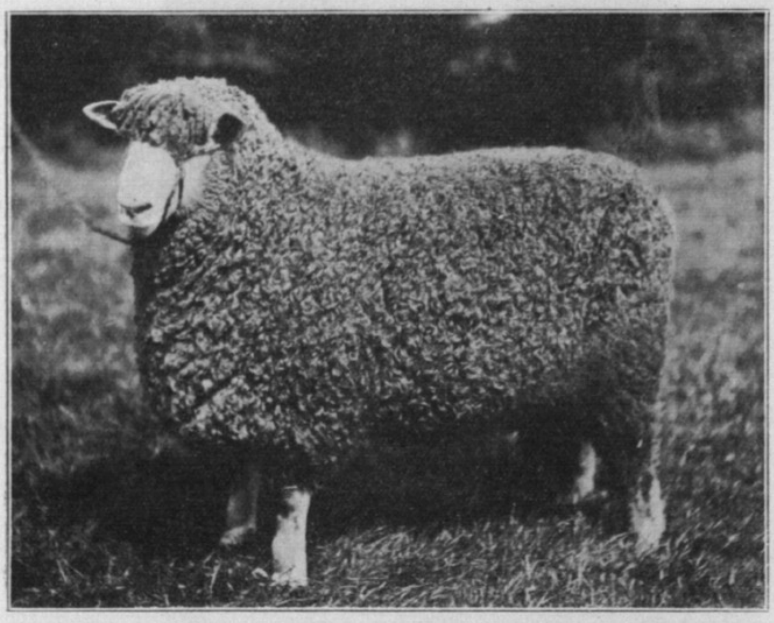

A champion Lincoln ram. Sold at public auction in England for £630.

A trio of Lincolns.

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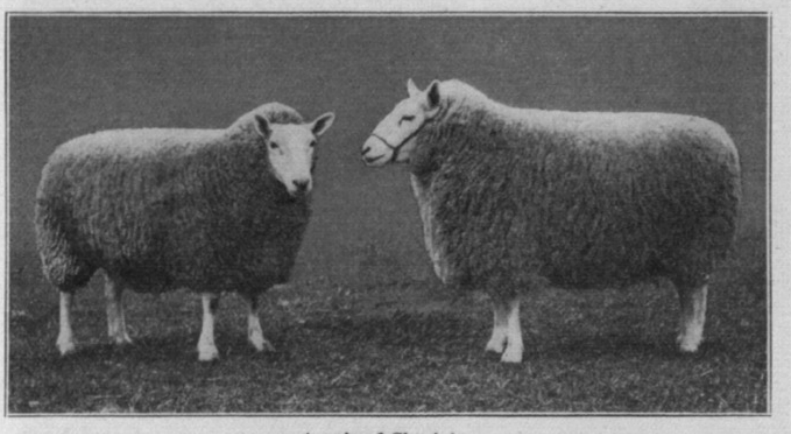
A pen of superb Lincoln ewes. Sold at public auction in England for an average of £81.18.

SHEEP THE FIRST YEAR.

By E. E. HAZEN, Brown county, Kansas, in *Farmers Mail and Breeze.*

A good ram is more than half the flock, and a poor ram nearly all the flock. Poor feeding means a poor price, and good feeding a good price. It pays to divide the pasture and change from one part to the other every ten days or two weeks.

Some sheep raisers advise keeping as many pounds of sheep on a pasture as one would of cattle. Two authorities whom I consider reliable say 1000 pounds of sheep will consume as much as 1200 pounds of cattle, and this I think is nearer the truth. It is poor economy to overpasture. Turn the sheep into the stubble field as soon as the grain is out. If the lambs are not sold by the time corn is husked turn them in the cornfield.



A pair of Cheviots.

Get Farmers' Bulletins Nos. 93 and 102 from the Bureau of Animal Industry, Washington, D. C., also one of the latest sheep books. Sheep can't be raised by book, but books will tell many things the sheep raiser should know, and much more cheaply than he can learn them by experience.

My neighbor, who has been raising market lambs for fifteen years, tells me they have paid him as much for the land pastured as he gets for the land cropped, and that his land is richer every year for crop production. He considers that the wool pays the cost of their winter keep. One year his 150 ewes sheared 11 pounds, which sold at 24 cents per pound. The three-year average for wheat on his farm is 37½ bushels per acre.

In 1893 I had 40 ewes which sheared 11 pounds of wool each. Their lambs weighed 110 pounds in January and sold at $5.25 per hundred. In the fall of 1902 I bought 105 yearling ewes at 3 cents per pound. Five died during the winter, and ten two-year-old ewes proved nonbreeders, but I raised 90 lambs that came in April and weighed 80 pounds in

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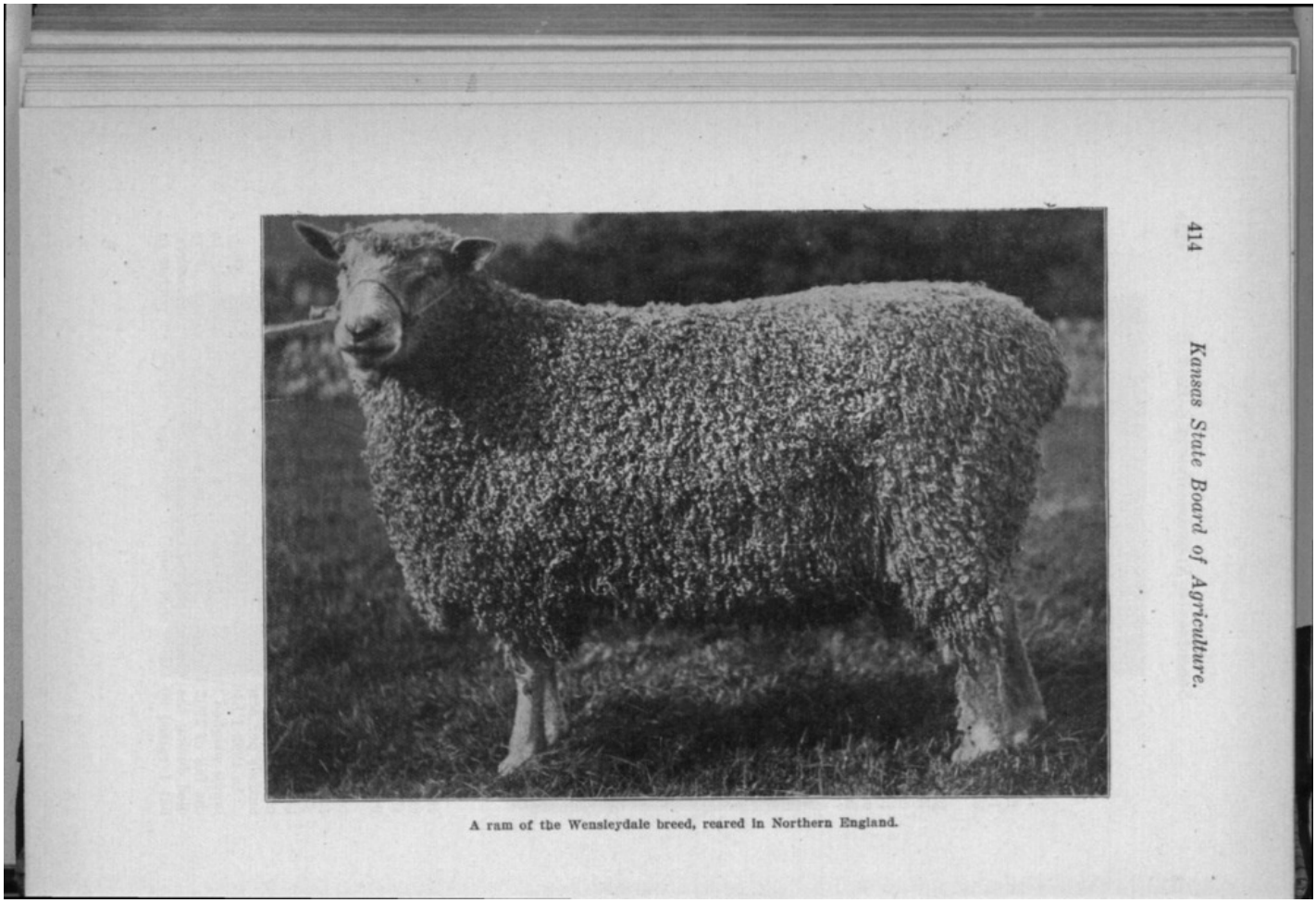

A ram of the Wensleydale breed, reared in Northern England.

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A pair of American Merino ewes, class A.

November. They sold at $6 in St. Joseph, being the first lot of lambs to bring that price on that market. The wool brought $1.15 per head. The same year I bought another lot of 125; the ewes sheared 8¾ pounds of wool that sold at 16½ cents. The lambs weighed 85 pounds and sold in October at $5.75, the top price in St. Joseph.

In 1907 I had 200 ewes which raised nearly 250 lambs. One hundred of the best lambs were saved for breeding. The others were sold in November for $7.50 per hundred, and weighed 95 pounds each.

In 1906, 250 ewes brought their owner nearly $750 in wool and mutton. In 1908 a bunch of 100 ewes sheared 8½ pounds of wool, which sold at 13 cents per pound, and these ewes raised 112 lambs, the wool and lambs bringing $3.75 for each ewe. The year 1908 was a bad season for the sheep raiser, and these lambs were marketed during a heavy run of "westerns." The day they went on the market half the offerings were unsold when the market closed.

Many think it necessary to start with only fifteen or twenty sheep. But with plenty of feed, fair judgment, and a well-defined idea that a sheep was not constituted to live on bare pastures and filthy water, I think it as well to start with enough to make it worth one's while.

January 1, 1904, I bought twenty-one head of grade Shropshire sheep, paying $66.75 for them, and three pure-bred Shropshires for $53.50. I have charged against my flock $1 for each year's keep, medicine, shearing, machinery and incidentals. January 1, 1910, my sheep invoiced 95 head, with a clear profit for the six years of $901. I question whether a dollar would buy enough feed to maintain a sheep for one year, but when the manure and the destruction of weeds and brush are placed to her credit I think the balance would be in her favor.—*A. W. Cornelius, Franklin County, Kansas.*

The hog is never finished without grain, while many sheep never see grain and yet top the market. The question then is, How do the commodities that it takes to make one or the other compare in value? It costs money to grow grain and it takes labor to keep down the weeds and grass that injure the grain and which sheep thrive on. It would pay to have a bunch of sheep to clean up the farm, even if they brought in no income, as they are the best fertilizers we have. One would hardly miss what 100 ewes and lambs would cost in a year's time on a quarter section, and the profit would be about this: Estimate the cost of beginning at $4 per head. They should be worth at least as much the next year. With very little care these ewes will raise 100 lambs that will bring $4 per head, and they will shear at least $2 per head of wool. This gives $6 per head for the caring of them for a year, or 50 cents per month—five times what is generally considered the cost of grazing sheep. —*J. J. Gladish, Wyandotte County, Kansas.*

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A pen of American Merinos, class A.

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A great class B American Merino ram. Fleece, 38 pounds.

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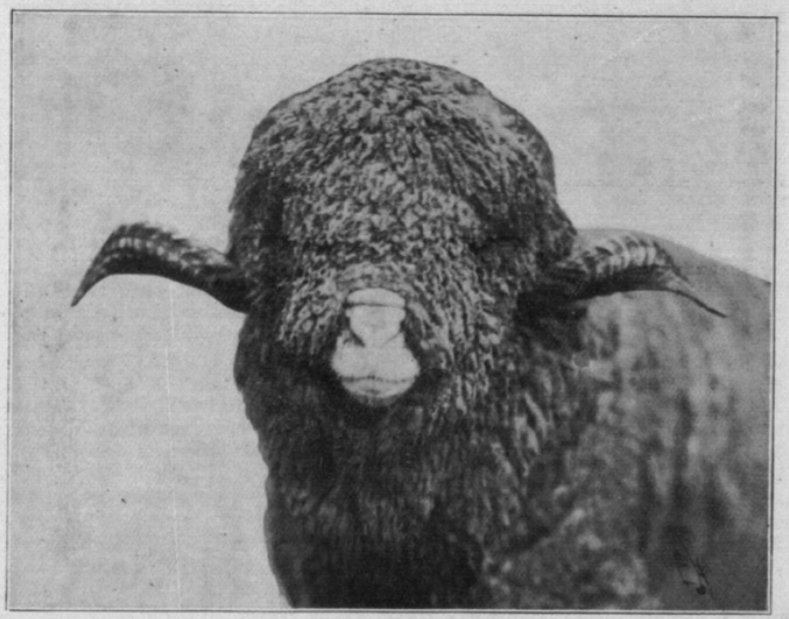
An American Merino ram, class A.



A French Merino ram.

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A high type of Rambouillet ram.

MARKET CLASSES AND GRADES OF MEAT.

From Illinois Experiment Station Bulletin No. 147, by LOUIS D. HALL.

The objects of this bulletin are to describe and illustrate the standard classes and grades of beef, veal, mutton and pork of the Chicago wholesale trade, and to define various technical terms that are commonly used in wholsale meat quotations.

The most intelligent production of animals for slaughter involves a knowledge of the standard requirements of the meat market. Breeders, feeders or investigators who consider only the cost of production and the market value of the live animal, ignoring the demands of the meat trade, overlook one of the most important factors that affect the live-stock market and may thus fail to follow the most rational lines of improvement in breeding and feeding.

Live-stock producers, however, have exceedingly limited opportunities for becoming familiar with this subject. The rapid development of transportation, refrigeration, slaughtering and packing facilities has led to the present system of large markets separated by distances which make them practically inaccessible to a large majority of stockmen. Further, since animals are sold by live weight the shipper feels concerned with their value on foot rather than their dressed yield. Finally, definite classifications are lacking in some branches of the meat trade, and the classifications in use are often complicated by variations in market conditions. The trade has become so vast and complex that it is very difficult—and has become increasingly difficult with each succeeding year—for one not engaged in the meat business to secure a definite knowledge of its various branches. The present tendency toward a more highly centralized organization of the retail meat trade in some localities increases still further its inaccessibility to the live-stock producer. As a result of these conditions meat dealers and consumers are far more familiar with the subject than meat producers. The following descriptions, therefore, are intended primarily to be of value to breeders and feeders who do not have opportunities to secure the information directly. With an understanding of meat trade requirements it is possible for a stockman to judge the carcass yield and quality of his animals as intelligently as buyers at the stockyards, because his knowledge of the feeds used, length of feeding period and gains made, are as essential in making such estimates as the apparent form, condition and quality of the fat animal, upon which points the buyer must chiefly rely.

The descriptions herein presented are based on data secured by the writer in a personal investigation at wholesale meat markets at the Union Stock Yards, Chicago, which are the largest establishments of their kind in the world; also at prominent wholesale and retail markets in Chicago and other cities which are supplied from the large houses at the Union Stock Yards. The engravings are from photographs taken under the writer's direction at the markets and at this experiment station. The officials and salesmen of the large packing houses and the retail dealers, jobbers, and other expert authorities who were consulted gave the most willing assistance. The valuable suggestions and information furnished by these gentlemen are gratefully acknowledged.

The classifications under which meats are quoted differ slightly in different American cities according to the nature of the supplies received

and the peculiarities of the local trade. They are essentially alike, however, at all the great packing centers of this country, and since most American wholesale markets are supplied from these centers, the classification as presented may be regarded as standard.

Market classifications of meat, like those of live stock, are more or less flexible because of the varied and varying conditions which affect the industry. In those branches of the trade in which the current market terms are vague and the classifications loose, the writer has attempted to present the subject as systematically as possible without exaggerating the classification actually in use. It is impracticable to include here all the minor and intermediate grades of meat within each class, and this bulletin describes only those classes and grades which may be considered standard or representative. It is also difficult to describe a grade of meat independently of others within its class. Generally, therefore, each grade should be studied in connection with those above and below it.

Attention is called to the fact that the following classifications are those of the wholesale meat trade and not of the live-stock market, and that they are described independently of the latter. The weights given refer to dressed carcasses and cuts, and in no case to live animals. Although in some instances the classes of meat correspond to those of live stock, they are in the main quoted and sold quite separately and differently from the live animals from which they are obtained. It is outside the objects of this bulletin to consider the relation of the animal to its meat products. It is hoped, however, that it will assist materially in placing such investigations on a more exact and uniform basis than would otherwise be possible, and that it will increase the number and significance of future investigations along this line.

BEEF IN GENERAL.

The general divisions of the beef trade are (1) *carcass beef*, (2) *beef cuts*, and (3) *cured beef products*. The term *fresh beef* includes carcass beef and beef cuts. It refers both to chilled beef, which is held in refrigeration at 36° to 38° F. for a few days or weeks only, and to frozen beef, which is stored at 10° to 15° F., usually for several months. About four-fifths of the beef trade consists of fresh beef, the remainder being converted into various products, such as barreled, smoked and canned beef, sausage meats, etc.

CARCASS BEEF.

About one-half the supply of fresh beef sold in wholesale markets is carcass beef (sides and quarters). The two sides or halves of a carcass are termed a "cattle." In the right or "closed" side the inner surface of the kidney fat is attached to the loin while in the left or "open" side it is free and a portion of the "skirt" (diaphragm) extends to the tenth* rib, forming the "hanging tenderloin." The two sides are nearly equal in weight, but the open one is often one per cent the heavier. When sides are sold separately no discrimination in price is made between rights and lefts.

Sides are quartered or "ribbed" between the twelfth and thirteenth ribs* when taken from the chillroom either for shipment or local delivery, except export and "Boston" cattle, which are cut between the tenth and eleventh ribs. The quarters are called "fores" and "hinds." In shipping and export trade, the four corresponding quarters are regarded as a carcass of beef; that is, they are sold as "straight cattle"

* Beef carcasses contain thirteen pairs of ribs. It is customary to number them from the neck backward.

rather than miscellaneous sides or quarters. In "car-route" and local city trade carcass beef is to a considerable extent handled as separate "fores" and "hinds."

Regular hind quarters contain 47 to 49 per cent of the carcass weight and fores 51 to 53 per cent, the average being about 48 per cent hinds and 52 per cent fores. In "exports" the quarters are practically equal in weight. Hinds are quoted about 25 per cent higher than fores in the cold months and up to 40 per cent higher in summer. The influence of season upon the price is due to the large amount of boiling and stewing pieces in the fore quarters, which meats are both more palatable and more economical to cook during the winter season than in warm weather and consequently are in greater demand at that time.

Carcass beef which is thick and fat enough so that the entire side can be sold over the butcher's block in retail cuts is known as "block beef" or "side beef." "Cutters" are dressed cattle that are not sufficiently thick-fleshed nor fat to be entirely utilized by the retailer, but contain certain wholesale cuts (loins and ribs) which may be used. "Canners" are those carcasses from which none of the regular wholesale cuts suitable for butcher-shop use can be obtained, and which, consequently, must be divided into smaller cuts, such as boneless fresh meats and cured beef products.

Classes and Grades of Carcass Beef.

The classes of carcass beef are *steers, heifers, cows,* and *bulls and stags.* This classification is based not merely upon differences in sex, but also upon the general uses to which they are adapted, as described in connection with each class.

Within the four classes, side beef is graded as *prime, choice, good, medium, common* and *canners.* In the markets the highest grade is sometimes termed "extra choice" or "fancy" beef; the term "fair" is frequently used instead of *medium,* and *canner* sides are often called "culls."

Grading Carcass Beef.

The grade to which a carcass, side or quarter belongs depends upon its *form, thickness, finish, quality, soundness* and *weight.*

By *form* is meant the shape or "build" of the side, its general outlines and the proportions of its different parts. Ideal conformation consists of compactness, *i.e.,* good width in proportion to length; short shanks and neck; and full rounds, loin and ribs. It is associated more or less closely with a proper degree of thickness and is also partially dependent upon the covering or finish of the carcass. Large plates,* "hollow" loins, prominent hips, thin chucks or "rangy," loosely coupled sides are especially discriminated against. A "rimmy" side is one showing an unusual degree of curvature in the ribs, giving the side a warped appearance and corresponding to paunchiness in live cattle.

Thickness of a carcass refers to the amount of lean flesh it carries. Thick-meated loin and ribs and full, compact rounds and chucks are especially essential. "Built like a cart horse" describes the fleshing demanded in high-grade carcasses. In the case of quartered sides the depth of lean meat on the ribs is readily seen. It is true that thickness depends somewhat upon the finish of the carcass; but there is a clear distinction between thickness due to fatness and thickness due to muscular flesh. Also, quality and firmness of flesh must be considered in judging thickness. For example, carcasses of distillery cattle often have

* For explanation of cuts see fig. 22.

a plump, thick appearance which is deceptive in that the flesh is not firm. Only the knife can completely reveal the thickness of a side and the proportions of fat and flesh. The appearance of an uncut side often misleads the most expert dealers with regard to the actual thickness of flesh.

Finish corresponds to "condition" in the live animal; in other words, it refers to the amount and distribution of fat on the carcass, and to the quality of flesh so far as it depends upon the degree of fatness. Perfect finish involves a smooth covering of firm, white fat over the entire carcass, with the greatest depth along the back (about one-fourth inch on 500-pound carcasses, up to three-fourths inch on 900-pound cattle); a white brittle "kidney" of medium size; and a lining of fat deposited in flakes or rolls on the inner surface of the ribs. The rounds and shanks are covered last in the process of fattening, hence these parts are indications of the last degree of finish. The fat must not be excessive at any point, especially over the loins and ribs, because this indicates either an overdone condition or a tendency toward thick, crusty covering without good marbling, *i.e.*, mixture of fat through the lean flesh. The highest quality of beef is that which contains the largest proportion of well-marbled lean with the minimum of excess fat, but a certain amount of the latter is indispensable in prime beef. In the lowest grade, outside fat is entirely lacking. A carcass carrying soft, "gobby" fat sells at a discount. A "green" or "grassy" appearance of the flesh indicates a marked lack of finish; it is a watery, flabby condition which is characteristic of grass-fed cattle.

Quality in beef is so closely associated with form, thickness and finish that the term is often used loosely to cover all three points. In a more definite sense, however, quality has reference to size, color and softness of the bones, smoothness and grain of flesh, color and general appearance of carcass, and an absence of coarseness in general. A carcass may be thick, fat and of excellent form and yet fall below the highest grade because it lacks quality in one or more of the above particulars.

Quality of flesh in a carcass depends chiefly upon its smoothness, grain and color. Rough, uneven flesh detracts from the appearance and usefulness of the beef. Coarse-grained, stringy, fibrous flesh is usually an indication of poor breeding, stagginess, advanced age or improper nourishment of the animal. Lack of grain and firmness, on the other hand, go with beef that lacks the age required for mature beef. Very young beef seldom has "substance" or marbling, and is high in percentage of water. It is considered by beef experts that carcasses of cattle under fifteen to eighteen months old are not generally mature enough for prime beef cuts, and those above three to four years old are usually past the point of highest quality, being too coarse in bone or grain of meat or uneven in finish. There are, of course, individual exceptions outside these limits of age.

Quality of bone is judged principally from the chine, breastbone and ribs. (Fig. 22.) The bones should be as small as consistent with the weight of the carcass. They are also a valuable indication of the age and consequently the quality of flesh of a carcass. The "buttons" or cartilages on the ends of the chine bones (spinous processes) are soft and white in carcasses of cattle up to one and one-half or two years old, and the bones or processes to which they are attached are soft and red with blood vessels. Thereafter the "buttons" or "pearls" gradually ossify, and at three years have changed to a dark-gray color, but are somewhat distinct from the bone proper until about the fifth year. Similar cartilages on the breastbone disappear through ossification before the third or

fourth year. The breastbone, backbone, ribs and pelvis gradually harden and whiten, especially after the age of eighteen months, and the segments of the rump bone unite, forming an apparently continuous surface. The bones of cows and heifers turn hard and white earlier than those of steers. In splitting the carcasses of old cows, bulls and oxen the chine bones are so flinty as to break and crush rather than cut, which gives the side a ragged appearance.

In color the fat should be a clear white and the flesh a bright, rich red. A "fiery" carcass is one the surface of which is spotted with highly colored blood vessels, due to incomplete bleeding when slaughtered. This indicates a similar condition within the lean and such sides usually "rib" dark. It may be due either to a feverish condition, fatigue from long shipment, pregnancy, or excitement at time of slaughter. A dark-yellow fat is characteristic of Jersey and Guernsey cattle; it is also believed to be an individual peculiarity of some cattle, and to be due to the feed in some cases. It is not always an indication of poor quality but is generally associated with dark-colored and poorly marbled meat. "Spotters" are carcasses in which brown or black spots are found in the flesh, varying in size from mere specks to one-eighth in diameter. These spots are sometimes found on the flank and skirt (diaphragm) but usually are not visible until the side is cut open in quartering. They are usually found in choice native beef and their cause is not known. Carcasses are generally sold subject to the return or discount of those which cut out spotted or very dark. Such defects detract about 25 per cent from the value of a carcass.

Soundness is considered in grading all beef carcasses, but most of all in the higher grades. A large percentage of carcasses are sold at a discount or sent to the cutting room on account of bruises, which injure both the appearance and keeping quality of the meat, although as a rule the injured portion is trimmed off in the dressing process. Bruises are found most commonly on the hips, shoulders and plates, these being the most exposed parts of the carcass. Such bruises are usually inflicted in shipment of cattle to market or in handling them in the stockyards. Unnecessary blows over the backs and loins of cattle cause the discounting of many carcasses which would otherwise grade high. Cattle which have been shipped long distances, such as Texas and Western range cattle, are bruised to a considerable extent, and droves of horned cattle show more carcass bruises than others, as a rule. Large brands are often visible on the carcass, sometimes sufficiently to diminish its value. "Bone-sour," which is caused by decomposition of the "joint water" of the hip-bone, is a common defect in heavy carcass beef. Especial care must be taken in the case of export beef, both as to "bone-sour" and bruises, either of which, however slight, excludes a side from export trade. Overripe beef, which has been held in storage too long or with insufficient refrigeration or ventilation, is also considered unsound. If well covered with fat it may be allowed to mold on the outside, otherwise a moldy condition indicates that the meat is tainted.

Weight is of importance in grading beef in the sense that the heavier carcasses are generally better in form, thickness, finish and quality than the lighter ones, and because different classes of retail trade differ as to the size of the steaks, roasts and other cuts which they demand. Consequently a system of grading by weight is of convenience to both buyer and seller. In shipping and export trade, carcass beef is assorted according to the following weights: (1) over 950 pounds; (2) 850-950 pounds; (3) 750-850 pounds; (4) 650-750 pounds; (5) 600-650 pounds; (6) 550-600 pounds; (7) 500-550 pounds; (8) under 500 pounds. The

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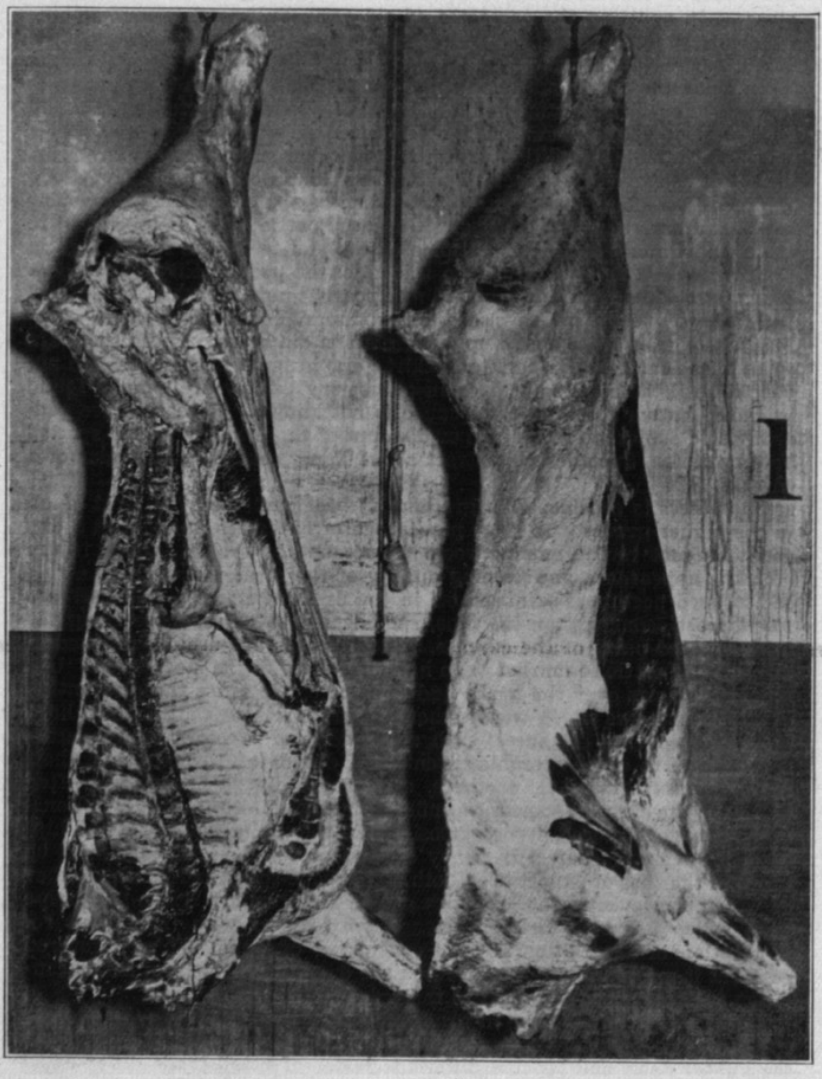

FIG. 1. PRIME STEER.

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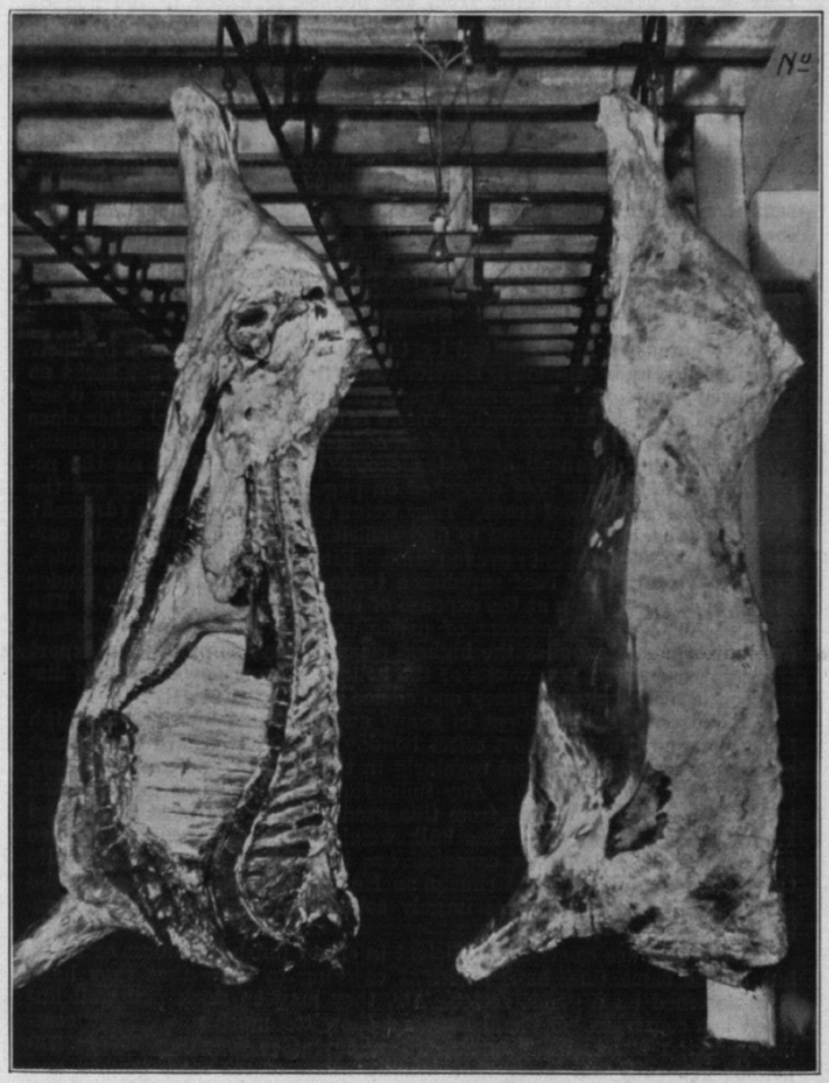

FIG. 2. CHOICE STEER.

heaviest carcasses seldom exceed 1050 pounds; the minimum weight is about 250 pounds, but comparatively few beef carcasses are sold in averages below 400 pounds. Heifers and cows are separated into only four or five grades, ranging from 450 pounds or under to 750 pounds or over. Bulls and stags are not handled as carcass beef sufficiently to necessitate grading by weight, and the bulk of those sold in the carcass weigh 700 to 950 pounds. The influence of weight in determining the market grade of a carcass varies with different branches of the trade and with the season, as will be noted in describing the various classes of beef.

As to the relative importance of the above factors in grading carcass beef, it may be said that in the higher grades finish is particularly essential, with thickness, quality and form of about equal importance. In the medium and lower grades, finish is a minor item and quality is of less relative importance than thickness and form. Weight and soundness are more important in the higher than in the lower grades.

STEERS.

Steer carcasses are identified by the cod fat, and generally by their full, fleshy rounds and loins, heavier, coarser bones, and short necks as compared with cows. They show more quality and finish than any other class, and are sold as carcass beef more extensively than any other class except heifers. The grades are *prime, choice, good, medium* and *common.*

Prime steers ("fancy" or "extra choice") completely fill all the requirements of carcass beef described on page 422 *et seq.* They are the "show cattle" of the beef trade. They weigh 900 to 1100 pounds (dressed) although it is not uncommon to find sufficient finish and quality in carcasses below 800 pounds to grade prime. Finish is of special importance, because this grade of beef supplies a trade which requires rich, tender steaks and roasts, even at the expense of considerable waste tallow. The demand for a limited amount of prime beef is comparatively constant and uniform. It supplies the highest class of city, shipping and export trade. Excepting a few weeks at the holiday season, however, little distinction is made between fancy and choice beef. (See fig. 1.)

Choice steers are excellent in shape and thickness but lack the high finish demanded by the most select holiday trade. They are the highest grade of dressed beef found regularly in the market, and are uniformly compact, thick and smooth. Any indications of coarseness or a marked lack of finish bar a bullock from this grade. They are most in demand from October until Lent. The bulk weigh 800 to 950 pounds. Choice cattle that are shipped or exported are handled in the quarter, while those used locally are sold chiefly as No. 1 wholesale cuts, except the plates and flanks, which are largely sold as barreled beef. (See figs. 2, 4.)

Good steers are somewhat defiicient in either finish, thickness or form, but at the same time have sufficient covering to show that they have been fattened on a grain ration. Or, they may be thick and well finished but coarse in bone and flesh, or show too much age. They commonly weigh 650 to 850 pounds. Steer carcasses weighing 750 to 800 pounds generally sell lower than heavier cattle of the same quality and finish because they are too light for the jobbing or hotel trade and too heavy for the retailer. This grade of beef is used largely in the shipping trade, and is also sold to hotels and restaurants that cater to commercial rather than fashionable patrons. (See figs. 3, 4.)

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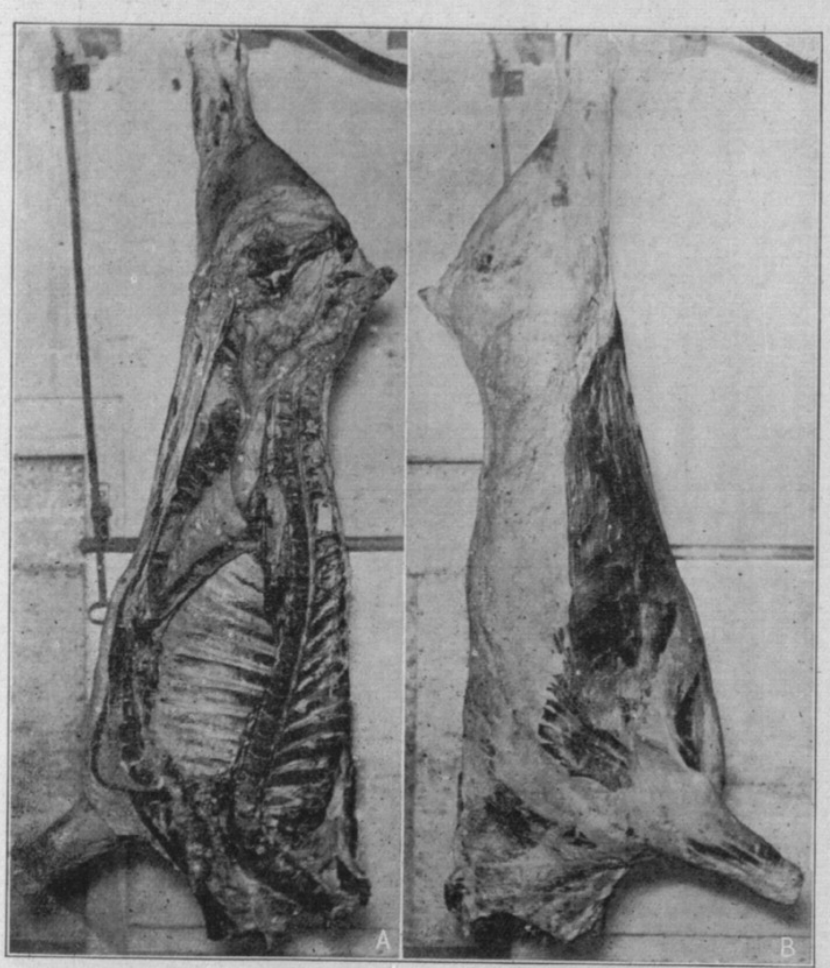

FIG. 3. GOOD STEER.

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FIG. 4. *A*, CHOICE STEER. *B*, GOOD STEER.

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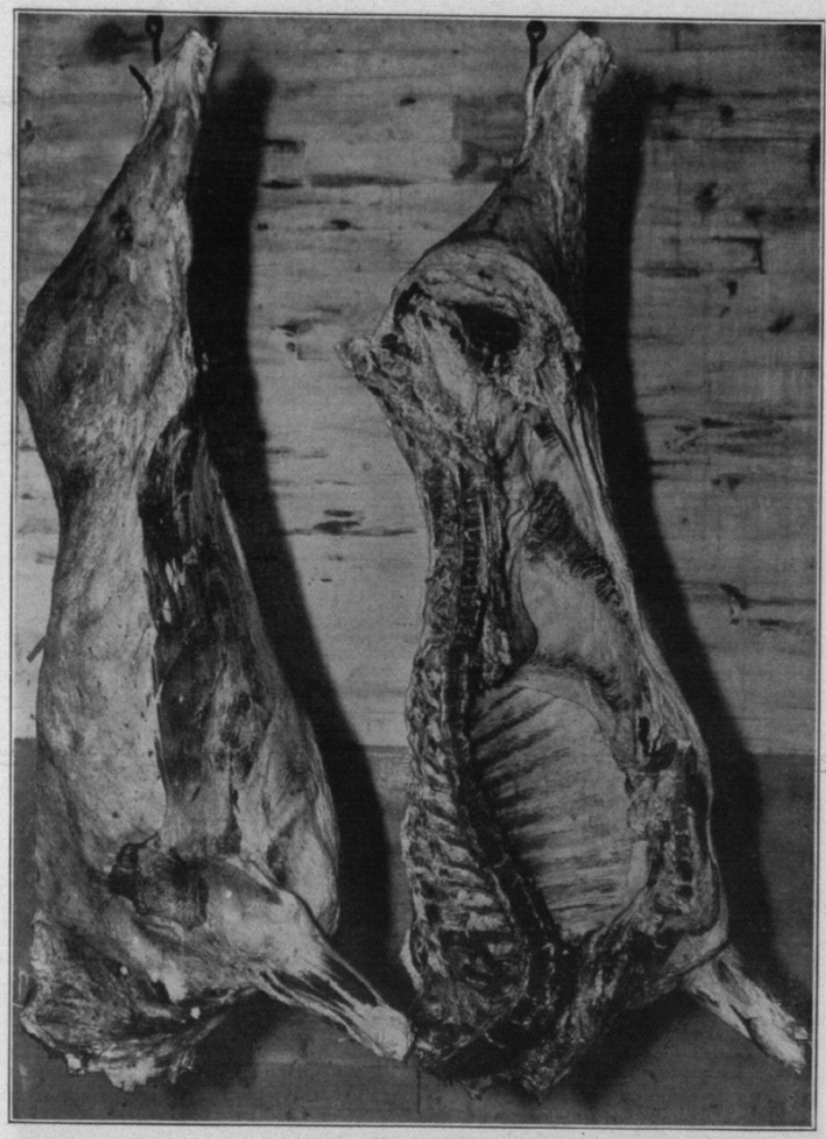

FIG. 5. MEDIUM STEER.

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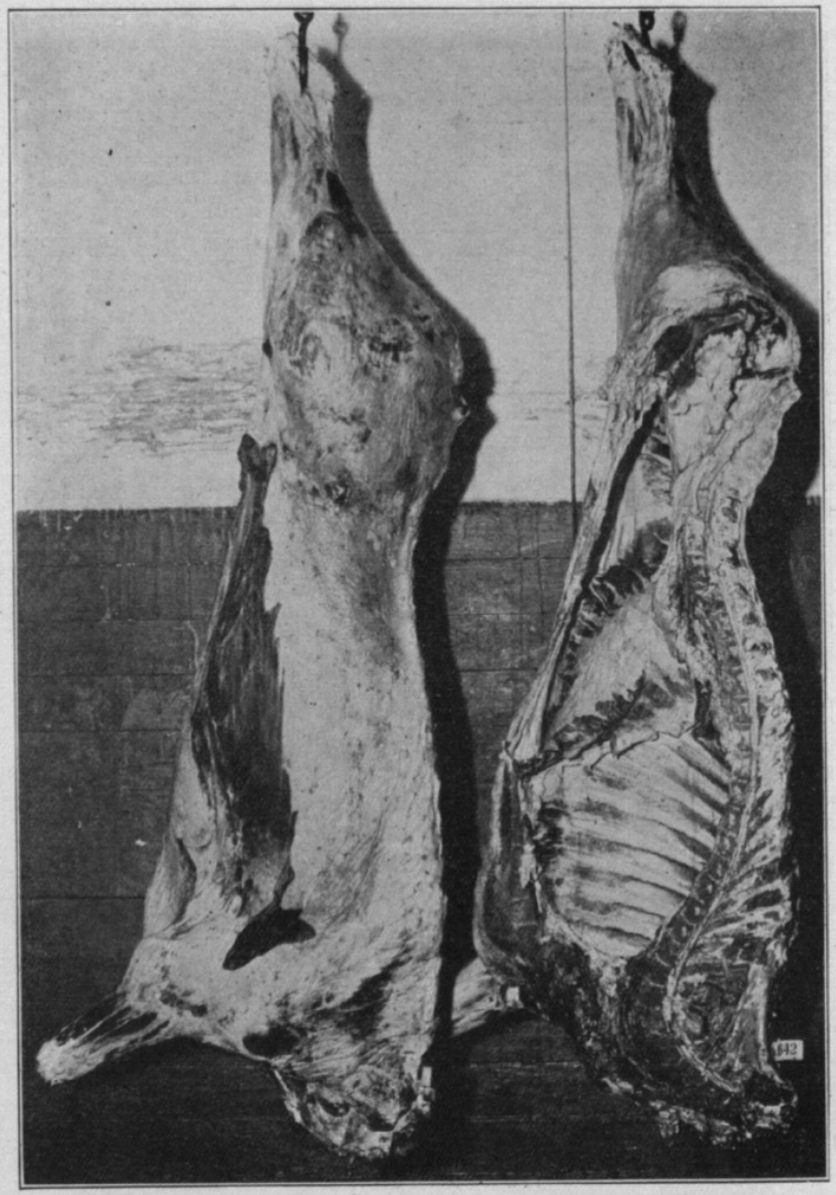

FIG. 6. COMMON STEER.

Medium steers are so graded because of a deficiency in any or all of the points mentioned in reference to the higher grades, but to a more marked extent. As a rule they are about as fat as good steers, but many have no covering over round or chuck, and a common feature of the grade is coarseness of quality and conformation. Some slightly staggy cattle are included. Heavy plates, hollow loins, prominent hips and shoulders, light rounds, long necks, dark color, "grassy" flesh or other equally objectionable points are found in this grade. They are the lowest grade of bullocks that are ordinarily sold in the carcass, and the majority of the supply is sold to retail markets. The wholesale cuts of medium Western steers are frozen in large quantities during the fall season. The general run weigh 550 to 750 pounds and some plain carcasses are included up to 900 pounds. (See fig. 5.)

Common steers have but little outside fat and kidney suet. They are angular, long in shank and neck, and generally dark-colored or "grassy" in flesh. Many sides which are disqualified from higher grades by reason of bruises, stagginess, "off color" (fiery, spotted or yellow) or other defects, are sold as common. (Fig. 6.) They average 450 to 600 pounds. When sold as carcass beef they are taken by jobbers or retailers who supply a cheap trade. Ordinarily, however, they enter the trade as wholesale cuts and barreled beef. They are the lowest grade of steer sides with the exception of an inconsiderable number of culls used for canning purposes. The latter are comparable in quality with common and canner cows. The proportion of common carcasses is much smaller in the steer class than in others, because thin steers are extensively shipped from the market to the country as feeders, whereas nearly all cattle of other classes sold at the large markets are slaughtered.

HEIFERS.

Heifer carcasses are distinguished from steers by the bag (udder), and as a rule they have smaller bones, slightly more angular rumps, less development of lean flesh, and average somewhat less in weight. While the percentage of carcass weight in loins and ribs is frequently as high in heifers as in steers, the greater thickness of lean meat in those parts of the steer is greatly to his advantage. Further, the tendency in heifer beef is to carry the fat more largely in the form of kidney suet or "gobby" fat than steers in the same degree of finish; they are also flatter in the loin, fatter in the plate and more "necky" than steers. Accordingly heifer beef is rated lower in the market than steers of corresponding grades. The average heifer carcass is lighter in weight and lower in grade than the average steer. Experts are not agreed as to the comparative quality of the two classes of beef, and it may be said that differences in color, texture and "substance" of flesh are not marked. The prevailing notion that heifer beef is in relatively higher favor in England than in America is true only so far as the best grades are concerned. Heifer sides differ from cows in their immaturity, indicated by softer bones and brighter color of flesh; in shape, especially their less angular rumps, fuller loins and shorter necks; and in their smoother finish and smaller, firmer bags. Heifers are sold principally in the side or quarter, owing to the demand for this beef for retail butcher trade. A considerable proportion of this class are *yearlings* (page 452), averaging 400 to 600 pounds. The regular run of heifers weigh 350 to 750 pounds, and are graded *prime*, *choice*, *good* and *medium*.

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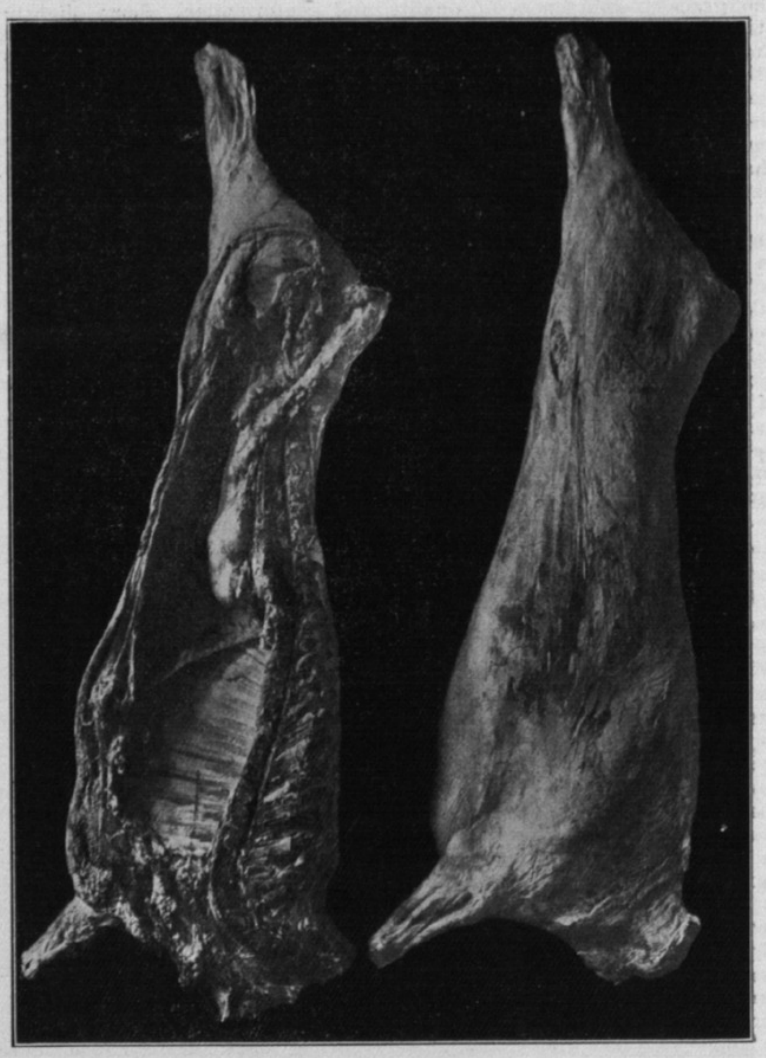

FIG. 7. PRIME HEIFER.

Prime heifers are selected according to practically the same requirements as prime steers, with special reference to full loins and rounds, compact form, smooth finish, short neck and light udder. They seldom have quite the thickness of flesh found in steers. The few carcasses of this grade which appear in the markets are usually seen in lots of choice and prime bullocks, in which case they may sell at a uniform price with the latter. When sold separately they are discriminated against by most American dealers, on the ground that the steaks and roasts do not cut out as thick in the lean as those cut from steers and that the proportion of waste fat is greater. Since this discrimination is not made in British trade, owing to its greater demand for fat steaks and roasts, prime and choice heifer carcasses are frequently exported. (See fig. 7.)

Choice heifers are similar to choice steers except in the points mentioned in the preceding paragraph. As a class they are imperfect in finish and quality rather than in form and thickness as compared with prime heifers. Like the latter, they must be strictly "maiden" heifers; that is, the carcass must bear no evidence of pregnancy. They are sold to city and country retail dealers, shipped east, and occasionally exported to Great Britain. (See fig. 8.)

Good heifers. These are sides that are clearly above the average of the class but lack either the finish, thickness or conformation, or all, required of a choice side. They must have sufficient covering and kidney fat to show that they have been fattened on a grain ration. Local retail dealers use a great deal of this grade of beef and much of it is shipped to the smaller cities. (See fig. 9.)

Medium heifers. The medium or average heifer carcass is plain in conformation and deficient in flesh and finish. A marked deficiency in either of the three points renders a side *medium* which would otherwise grade *good*, and many of this grade are of the heavy weights (700-800 pounds) and somewhat "cowish" in general appearance. They are the lowest grade of heifer sides that can be entirely sold over the block of the ordinary retailer, and are to some extent made into wholesale cuts before being sold by the killer. This beef supplies the second-class trade, of which most retailers have more or less, and is used for the bulk of the trade in cheaper markets. (See fig. 10.)

Common heifers. Common heifers have little covering of fat and only sufficient thickness of flesh to be used as cutters. This grade also includes many heavy heifers which are still more "baggy" and "cowish" than medium heifers. In fact little distinction is made between common heifers and cows, as the differences are much less apparent than in higher grades, and in many cases are quite immaterial. (Fig. 11.) Very few heifers are found among canners, and those that are so found are well represented by the illustration and description of canner cows.

Cows.

The angular form, long neck, hard, white bones and lack of thickness of the majority of cow carcasses make them easy to distinguish from other classes of beef. The bag is trimmed off as closely as possible in dressing cows, but it is generally large and "baggy" enough to indicate the class of the carcass. The bones are also hard and therefore do not split as smoothly as heifers or steers, especially at the chine and loin. Fat cow carcasses often carry their tallow as kidney fat and in bunches on the back and rump rather than an even covering; and the flesh is seldom as well marbled as that of heifers or steers. Fat is especially

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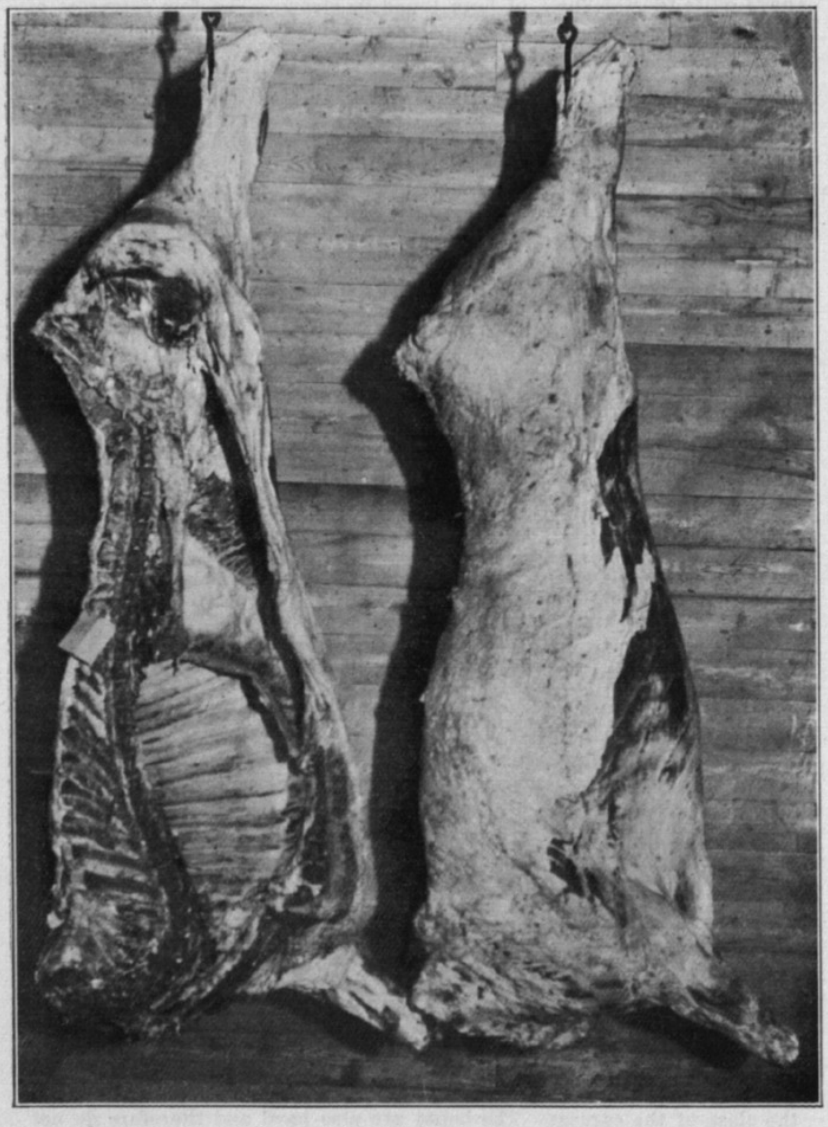

FIG. 8. CHOICE HEIFER.